Background:

The Heritage Documentation Programs (HDP) consist of The Historic American Building Survey, The Historic American Engineering Record, The Historic American Landscapes Survey, and The Cultural Resources GIS. HDP is tasked by the National Park Service with creating guidelines and standards for the documentation of America's architectural, engineering, and landscape heritage through the production of measured drawings, large-format photographs and written histories. Archived materials are maintained in a special collection at the Library of Congress, available to the public copyright free in both hard copy and electronic formats. HDP partners with state and local governments, private industry, professional societies, universities, preservation groups, and other Federal agencies. Documentation enters the collection through a summer recording program that trains students in preservation documentation, mitigation activities under sections 106 and 110 of the National Historic Preservation Act of 1966, submissions in prize competitions, and donations. The collection provides permanent records of a wide variety of historic sites and is distinguished in its national scope, consistent format, archival stability, and continued growth. The documentation also contributes to wider recognition and appreciation of historic resources; provides baseline documentation for rehabilitation and restoration; and makes available well-researched materials for interpretation and illustration.

Abstract: **Documentation to the Secretary of the Interior's Standards: Assessing the Value of Laser Scan Data**

The Heritage Documentation Programs consider High-Definition Surveying (HDS) to be a significant tool, one of many it employs in the survey of historic sites and structures. However, this technology by itself is limited in its ability to provide adequate information to completely document heritage sites to the high standards recognized today by the preservation community. HDP has utilized terrestrial laser scanning in documenting cultural heritage through experimentation and application of the technology since 2002 and continues to incorporate its use extensively into their workflow. With a mission that places emphasis on creating an archival record, HDP strives to supply project sponsors with a comprehensive set of deliverables that convey an understanding of a site or structure to the general public; interpret its processes, patterns of use, and cultural values, and provide baseline documentation for rehabilitation and restoration. Research and data capture necessary to fully describe historic architectural resources requires an understanding of the principles and history of architecture to help define, manage, and guide the documentation effort. The trained staff of architectural historians, architects, landscape architects, and engineers at HDP provides a discerning eye to projects to make informed decisions from laser scan and field data that ensures knowledgeable

and sound documentation. This multi-disciplinary expertise is also utilized in the HDP summer intern program to mentor and educate the next generation of architectural preservationists, providing longevity to the many techniques and methodologies of documenting our cultural heritage.

As laser scanning greatly reduces the time needed in the field for measuring, it also tends to reduce physical contact and exploration of a site that can uncover or expose unexpected features not readily seen. While it remains virtually impossible to capture 100% of a site or structure with laser scanning alone, combining HDS with other measuring techniques and extensive research has proved an effective means of gathering field measurements and data that reinforce thorough documentation. In addition to supporting large-format photographs and historical reports, the creation of standardized, conventional drawings facilitates strict archival stability standards and the public and scholarly dissemination of the documentation. HDP uses supplemental data to fill in the blanks left by laser scanning, allowing for the reverse engineering of point clouds into smarter parametric 2D drawings, 3D solid models, meshes, and surfaces. These models and other visuals created during the project workflow can be manipulated to provide a multitude of products determined by the sponsor's needs. The printed reports, photographs, and drawings become the archival material that will secure exceptional permanence for the documentation while the digital data remain at this time unconventional and unverifiable entities. The Library of Congress and others are researching methods and formats in which to sustain "born digital" records to standards defined for the collection, but at this time none have been propped.

The emergence of new digital HDS technologies has increased the ability to measure heritage sites faster than ever before, but a hasty application of these technologies can easily result in superficial and incomplete documentation of the significant features of a structure or site. To achieve well-examined, thoughtful, and comprehensive documentation, laser scanning must be supplemented with additional field measurements and observations and receive specific evaluation and translation by professionals in the field of historic preservation.

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